	Application No.	Applicant(s)
Notice of Allowability	10/559,513	SAUERMANN, VOLKER
	Examiner	Art Unit	
	MICHAEL PHAM	2167	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *11/09/09*.

2. ☒ The allowed claim(s) is/are *1,3-6,8-16,18,19 and 21-28*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☒ All   b) ☐ Some*   c) ☐ None   of the:

        1. ☒ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

        3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

        1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application

6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *20100203* .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____.

DETAILED ACTION

Claim Status

1.   Claims 1, 3-6, 8-16, 18-19, and 21-28 are pending.

Claim Rejections - 35 USC § 101

2.   Regarding claim 15, this claim recites a "computer-readable storage medium". In the absence of any other modifying disclosure of this limitation in the specification, the 'computer-readable storage medium' is limited to statutory embodiments only such that it satisfies the terms of 35 U.S.C. 101.

3.   Regarding claims 16, 18-19, and 21-28, in particular claim 16, claim 16 recites a "processor" and "memory". In the absence of any other modifying disclosure of this limitation in the specification, the terms 'processor' and 'memory' are limited to statutory embodiments only such that it satisfies the terms of 35 U.S.C. 101.

Examiner's Amendment

4.   An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

5.   Authorization for an examiner's amendment was given in a telephone interview with Mr.

Joseph F. Key (reg. 44,827) on February 3, 2010.

In the specification:

Please Amend Page 23 paragraph 1 as below:

Processors suitable for the execution of a computer program include, by way of example, both general and special purpose microprocessors, and any one or more processors of any kind of digital computer. Generally, a processor will receive instructions and data from a read-only memory or a random access memory or both. The essential elements of a computer are at least one processor for executing instructions and one or more memory devices for storing instructions and data. Generally, a computer will also include, or be operatively coupled to receive data from or transfer data to, or both, one or more mass storage devices for storing data, e.g., magnetic, magneto-optical disks, or optical disks. Information carriers suitable for embodying computer program instructions and data include all forms of non-volatile memory, including by way of example semiconductor memory devices, e.g., EPROM, EEPROM, and flash memory devices; magnetic disks, e.g., internal hard disks or removable disks; magneto-optical disks; and CD-ROM and DVD-ROM disks. <u>Also, computer-readable storage mediums suitable for storing computer program instructions and data include all forms of non-volatile memory, including by way of example semiconductor memory devices, e.g., EPROM, EEPROM, and flash memory devices; magnetic disks, e.g., internal hard disks or removable disks; magneto-optical disks; and CD-ROM and DVD-ROM disks.</u> The processor and the memory can be supplemented by, or incorporated in special purpose logic circuitry.

4.   **In the claims:**

        Claims 1, 3-5, 8, 10, 15, 16, 18, 21, 23, 24, and 28 have been amended. Claims 2, 7,

17, 20, and 29 have been cancelled. Please replace all prior claims with the claims below.

1. (Currently Amended) A computer implemented method for logically evaluating a Boolean

expression used in a query statement, wherein the Boolean expression refers to an attribute and

includes a plurality of conditions, <u>the method </u>comprising:

        receiving the Boolean expression;

decomposing the Boolean expression into the plurality of conditions;

wherein each condition of the plurality of conditions includes an attribute name, a

relational operator, and at least one condition value;

for each condition of the plurality of conditions, extracting [[from the condition]] at least

one condition value referring to the attribute name for a condition of the plurality of conditions,

wherein the at least one condition value defines a value range of the condition of the plurality of

conditions;

inserting the at least one condition value in a condition value list in sorted order;

initializing, by a computer, a relationship vector for the at least one condition value,

wherein each relationship vector component in the relationship vector is a relational operator

counter and initializing the relationship vector comprises setting the relational operator counter

for each of the relationship vector components to an initial value; and

adjusting the relationship vectors for the at least one condition value and for each further

condition value that is in the condition list [[and]] that is in the value range of the condition of

the at least one condition value by adjusting the relational operator counters, wherein adjusting

the relationship vectors comprises:

incrementing at least one of the relationship vector components for the at least

one condition value by an increment to reflect the condition, and

propagating the increment through each of the relationship vector components for

each further condition value in the condition list as long as the further condition value is

within the value range of the condition; and

reducing the Boolean expression according to each relationship vector.

2. (cancelled).

3. (currently amended) The method of claim 1, wherein extracting [[from]] the [[condition]] at least one condition value referring to the attribute name for the condition of the plurality of conditions comprises:

retrieving a maximum condition value [[and/]]or a minimum condition value of the condition.

4. (Previously presented) The method of claim 1, wherein extracting [[from]] the [[condition]] at least one condition value referring to the attribute name for the condition of the plurality of conditions comprises:

retrieving an identity condition value of the condition.

5. (currently amended) The method of claim [[2]]1, wherein initializing the relationship vector comprises:

initializing the relationship vector as including a LESS THAN component value, an EQUAL TO component value or a GREATER THAN component value.

6. (previously presented) The method of claim 5, wherein initializing the relationship vector comprises:

setting each relationship vector component for the at least one condition value to an initial value if the condition list has no further condition value;

setting each relationship vector component to the LESS THAN component value of the relationship vector for the next greater condition value in the condition value list; or

setting each relationship vector component to the GREATER THAN component value of the relationship vector for the next smaller condition value in the condition value list.

7 (Cancelled).

8. (Currently Amended) The method of claim [[7]]1, wherein reducing the Boolean expression comprises:

identifying an AND-subset of condition values in the condition value list, where each subset condition value has at least one relationship vector component that has a value equal to the increment multiplied by the number of conditions in the plurality of conditions.

9. (Previously presented) The method of claim 8, wherein reducing the Boolean expression further comprises:

composing a reduced Boolean expression based on the AND-subset.

10. (Currently Amended) The method of claim [[7]]1, wherein reducing the Boolean expression comprises:

identifying an OR-subset of condition values in the condition value list, where each subset condition value has at least one relationship vector component with the initial value.

11. (Previously presented) The method of claim 10, wherein reducing the Boolean expressions further comprises:

composing a reduced Boolean expression based on the OR-subset.

12. (Previously presented) The method of claim 8, further comprising: if the AND-subset is empty, sending a corresponding notification to a user.

13. (Previously presented) The method of claim 10, further comprising: if the OR-subset is empty, sending a corresponding notification to a user.

14. (Previously presented) The method of claim 2, wherein reducing the Boolean expression comprises:

composing a reduced Boolean expression, where the reduced Boolean expression comprises a condition that merges at least a first condition and a second condition, the first and second conditions referring to the attribute and representing disjoint intervals, the attribute having no values between the inner interval boundaries of the disjoint intervals.

15. (Currently Amended) A computer-readable storage medium storing a computer program product for logically evaluating a Boolean expression used in a query statement, the computer

program product [[being tangibly embodied on a computer-readable storage medium and]]

including executable instructions that, when executed, is configured to cause at least one

processor of a computing device to:

 receive the Boolean expression;

 decompose the Boolean expression into the plurality of conditions,

  wherein each condition of the plurality of conditions includes an attribute name, a

 relational operator, and at least one condition value;

 for each condition of the plurality of conditions, extracting [[from the condition]] at least

one condition value referring to the attribute name for a condition of the plurality of conditions,

wherein the at least one condition value defines a value range of the condition of the plurality of

conditions;

 insert the at least one condition value in a condition value list in sorted order;

 initialize a relationship vector for the at least one condition value, wherein each

relationship vector component in the relationship vector is a relational operator counter and the

instructions that cause the processor to initialize the relationship vector comprises instructions

that cause the processor to set the relational operator counter for each of the relationship vector

components to an initial value; and

 adjust the relationship vectors for the at least one condition value and for each further

condition value that is in the condition list [[and]] that is in the value range of the condition of

the at least one condition value by adjusting the relational operator counters, wherein the

instructions that cause the processor to adjust the relationship vectors comprise instructions that

cause the processor to:

increment at least one of the relationship vector components for the at least one condition value by an increment to reflect the condition, and

propagate the increment through each of the relationship vector components for each further condition value in the condition list as long as the further condition value is within the value range of the condition; and

reduce the Boolean expression according to each relationship vector.

16. (Currently Amended) A computer system for logically evaluating a Boolean expression used in a query statement, wherein the Boolean expressions refers to an attribute and includes a plurality of conditions, comprising:

[[a computing device having]] a memory to receive the Boolean expression and to store a condition value list; and having at least one processor for executing computer program instructions to:

decompose the Boolean expression into the plurality of conditions,

wherein each condition of the plurality of conditions includes an attribute name, a relational operator, and at least one condition value;

for each condition of the plurality, extract [[from the condition]] at least one condition value referring to the attribute name for a condition of the plurality of conditions, wherein the at least one condition value defines a value range of the condition of the plurality of conditions;

insert the at least one condition value in the condition value list in sorted order;

initialize a relationship vector for the at least one condition value, wherein each relationship vector component in the relationship vector is a relational operator counter and the instructions that cause the processor to initialize the relationship vector comprises instructions that cause the processor to set the relational operator counter for each of the relationship vector components to an initial value; and

adjust the relationship vectors for the at least one condition value and for each further condition value that is in the condition list [[and]] that is in the value range of the condition of the at least one condition value by adjusting the relational operator counters, wherein the computer program instructions causing the at least one processor to adjust the relationship vectors comprise:

a first portion to increment at least one of the relationship vector components for the at least one condition value by an increment to reflect the condition, and

a second portion to propagate the increment through each of the relationship vector components for each further condition value in the condition list as long as the further condition value is within the value range of the condition; and

wherein the at least one processor further executes computer program instructions to reduce the Boolean expression according to each relationship vector.

17. (cancelled)

18. (currently amended) The computer system of claim [[17]]16, wherein the relationship vector

comprises a LESS THAN component value, an EQUAL TO component value, and a GREATER

THAN component value.

19. (previously presented) The computer system of claim 18, wherein the computer program

instructions causing the at least one processor to initialize comprise:

      a first portion to set each relationship vector component for the at least one condition

value to an initial value if the condition list has no further condition value; and

      a second portion to set each relationship vector component to the LESS THAN

component value of the relationship vector for the next greater condition value in the condition

value list, or to set each relationship vector component to the GREATER THAN component

value of the relationship vector for the next smaller condition value in the condition value list.

20. (cancelled)

21. (Currently Amended) The computer system of claim [[20]]16, wherein the memory stores an

AND-subset of condition values in the condition value list, where each subset condition value

has at least one relationship vector component that has a value equal to the increment multiplied

by the number of conditions in the plurality of conditions.

22. (Previously presented) The computer system of claim 21, wherein the at least one processor

executes further computer program instructions to compose a reduced Boolean expression based on the AND-subset.

23. (Currently Amended) The computer system of claim [[20]]16, wherein the memory stores an OR-subset of condition values in the condition value list, where each subset condition value has at least one relationship vector component with the initial value.

24. (Currently Amended) The computer system of claim [[20]]16, wherein the memory stores an OR-subset of condition values in the condition value list, where each subset condition value has at least one relationship vector component with a value greater than the initial value.

25. (Previously presented) The computer system of claim 23, wherein the at least one processor executes further computer program instructions to compose a reduced Boolean expression based on the OR-subset.

26. (Previously presented) The computer system of claim 21, where the at least one processor executes further computer program instructions to send a corresponding notification to a user, if the AND-subset is empty.

27. (Previously presented) The computer system of claim 23, where the at least one processor executes further computer program instructions to send a corresponding notification to a user, if the OR-subset is empty.

28. (currently amended) The computer system of claim 22, where the memory stores a list of all values of the attribute name; and the at least one processor executes further computer program instructions to merge at least a first condition and a second condition, the first and second conditions referring to the attribute name and representing disjoint intervals, the attribute name having no values between the inner interval boundaries of disjoint intervals.

29. (Cancelled).

Allowable Subject Matter

5.   Claims 1, 3-6, 8-16, 18-19, and 21-28 are allowed.

6..   The following is a statement of reasons for the indication of allowable subject matter.

With respect to the independent claims, the prior art of record, single or in combination, does not teach or fairly suggest the steps of:

"for each condition of the plurality of conditions, extracting at least one condition value referring to the attribute name for a condition of the plurality of conditions, wherein the at least one condition value defines a value range of the condition of the plurality of conditions;

inserting the at least one condition value in a condition value list in sorted order;

initializing a relationship vector for the at least one condition value, wherein each relationship vector component in the relationship vector is a relational operator counter and

initializing the relationship vector comprises setting the relational operator counter for each of

the relationship vector components to an initial value; and

adjusting the relationship vectors for the at least one condition value and for each further

condition value that is in the condition list that is in the value range of the condition of the at

least one condition value by adjusting the relational operator counters, wherein adjusting the

relationship vectors comprises:

incrementing at least one of the relationship vector components for the at least

one condition value by an increment to reflect the condition, and

propagating the increment through each of the relationship vector components for

each further condition value in the condition list as long as the further condition value is

within the value range of the condition; and

reducing the Boolean expression according to each relationship vector.", in combination

with the other claimed limitations. Independent claims 15 and 16 recite similar limitations and

are therefore allowed.   Dependent claims are allowed for being dependent to an allowed claim.

Any comments considered necessary by applicant must be submitted no later than the

payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for

Allowance".

Contact Information

7.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to MICHAEL PHAM whose telephone number is (571)272-3924.

The examiner can normally be reached on 9am-5pm.

        If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, John Cottingham can be reached on 571-272-7079. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

        Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. P./   /John R. Cottingham/
Examiner, Art Unit 2167   Supervisory Patent Examiner, Art Unit
                                                    2167

        /C. T. T./

        Primary Examiner, Art Unit 2169